

29.43 [p. 770]

 $N=280, d=5.0\text{ cm}$ $I=3.8\text{ A}$ "short" $\Rightarrow N$ "independent coils"

$$p. 764 \quad \mu = NI A = N i \pi \left(\frac{d}{2}\right)^2 = 280 \cdot 3.8 \cdot \pi \cdot 0.025^2 \approx 2.089$$

$$\approx \underline{\underline{2.1\text{ Am}^2}}$$

b) sök $z \gg d$ så att $|B| = 5.0\text{ mT}$

$$(29-27) \quad \vec{B}(z) = \frac{\mu_0}{2\pi} \frac{\vec{\mu}}{z^3}$$

$$z = \left(\frac{\mu_0}{2\pi} \frac{|\vec{\mu}|}{|B|} \right)^{1/3} = \left(\frac{1.257 \cdot 10^{-6} \cdot 2.089}{2\pi \cdot 5.0 \cdot 10^{-3}} \right)^{1/3} \approx 0.437$$

$$\approx \underline{\underline{0.44\text{ m}}}$$